Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1-6. (canceled)

7. (currently amended) The particle analyzer of claim [[1]] 64, wherein the particle concentrator is adapted to provide mass sorted particles to the sample collection surface.

8. (currently amended) A [[The]] particle analyzer ~~of claim 1~~, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface; and

a detector adapted to detect the induced fluorescence;

wherein the sample collection surface comprises an adsorbate.

9. (canceled)

10. (currently amended) The particle analyzer of claim [[1]] 64, wherein the energy source provides energy that induces at least some excitation fluorescence in a material of interest.

11. (canceled)

12. (currently amended) A [[The]] particle analyzer ~~of claim 1~~, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface; and

a detector adapted to detect the induced fluorescence;

wherein the detector is adapted and configured to detect excitation fluorescence while being at least substantially blind to reflective energy from the energy source.

13. (currently amended) The particle analyzer of claim 12, wherein the detector is adapted and configured to detect excitation fluorescence while being positioned at an angle relative to the sample collection surface such that reflective energy from the energy source does not impinge upon the detector.

14. (canceled)

15. (currently amended) A [[The]] particle analyzer ~~of claim 1~~, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface; and

a detector adapted to detect the induced fluorescence;

wherein the detector is sensitive to a plurality of wavelengths.

16-21. (canceled)

22. (currently amended) The particle analyzer of claim [[1]] 64, further comprising a controller that is configured to control operation of the energy source and the detector.

23-25. (canceled)

26. (currently amended) The particle analyzer of claim [[1]] 64 further comprising a chemical controller for selectively adding one or more chemicals to the sample collection surface.

27. (previously presented) A particle analyzer device, comprising:

a substrate;

a sample collection surface disposed over the substrate for collecting particles provided to the particle analyzer device; and

temperature adjusting means thermally coupled to the sample collection surface for adjusting the temperature of the sample collection surface.

28. (original) The particle analyzer device of claim 27, wherein the sample collection surface is at least partially thermally isolated from the substrate.

29. (original) The particle analyzer device of claim 27, wherein the substrate includes a cavity, and the sample collection surface is at least partially suspended over the cavity.

30. (original) The particle analyzer device of claim 29, further comprising a support member at least partially suspended over the cavity, where the sample collection surface is disposed on the support member.

31. (original) The particle analyzer device of claim 30, wherein the support member comprises one or more legs connecting the support member to the substrate.

32. (original) The particle analyzer device of claim 30, wherein the temperature adjusting means is disposed adjacent to or within the support member.

33. (previously presented) The particle analyzer device of claim 29, wherein the substrate comprises a silicon wafer.

34. (original) The particle analyzer device of claim 27, wherein the temperature adjusting means comprises a resistive heater.

35. (original) The particle analyzer device of claim 27, wherein the temperature adjusting means comprises a thermoelectric cooling element.

36. (original) The particle analyzer device of claim 27, wherein the sample collection surface comprises an adsorbate.

37. (original) The particle analyzer device of claim 27, wherein the sample collection surface comprises carbon nanotubes.

38-63. (canceled)

64. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

a substrate adapted to mount the sample collection surface, the sample collection surface being at least partially thermally isolated from the substrate;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface; and

a detector adapted to detect the induced fluorescence.

65. (previously presented) The particle analyzer of claim 64, further comprising temperature modifying means thermally coupled to the sample collection surface.

66. (previously presented) The particle analyzer of claim 65, wherein the temperature modifying means comprises heating means.

67. (previously presented) The particle analyzer of claim 65, wherein the temperature modifying means comprises cooling means.

68. (previously presented) The particle analyzer of claim 65, wherein the energy source provides energy that induces at least some excitation fluorescence in a material of interest.

69. (previously presented) The particle analyzer of claim 65, wherein the detector is adapted and configured to detect excitation fluorescence while being at least substantially blind to reflective energy from the energy source.

70. (previously presented) The particle analyzer of claim 65, wherein the detector is adapted and configured to detect excitation fluorescence while being positioned at an angle relative to the sample collection surface such that reflective energy from the energy source does not impinge upon the detector.

71. (previously presented) The particle analyzer of claim 65, wherein the detector is sensitive to a plurality of wavelengths.

72. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator, the sample collection surface comprising carbon nanotubes;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface; and

a detector adapted to detect the induced fluorescence.

73. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface;

an energy source lens adapted to direct the energy from the energy source to at least a portion of the sample collection surface; and

a detector adapted to detect the induced fluorescence.

74. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface;

a detector adapted to detect the induced fluorescence; and

a detection lens adapted to focus induced fluorescence on the detector.

75. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface; and

a detector adapted to detect the induced fluorescence, the detector comprising an array of pixels.

76. (previously presented) The particle analyzer of claim 75, wherein at least some of the pixels of the array of pixels are sensitive to a plurality of wavelengths, and are configured to provide a spatially resolved image.

77. (previously presented) The particle analyzer of claim 75, wherein at least some of the pixels of the array of pixels are sensitive to a single wavelength band.

78. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface; and

a detector adapted to detect the induced fluorescence, wherein the detector includes a plurality of pixels sensitive to ultraviolet light and a plurality of pixels sensitive to visible light.

79. (previously presented) The particle analyzer of claim 78, wherein the plurality of pixels sensitive to ultraviolet light are arranged in a first linear array and the plurality of pixels sensitive to visible light are arranged in a second linear array.

80. (previously presented) The particle analyzer of claim 78, wherein at least some of the pixels sensitive to ultraviolet light and at least some of the pixels sensitive to visible light are positioned in an array in pair-wise fashion.

81. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface;

a detector adapted to detect the induced fluorescence; and

a controller that is configured to control operation of the energy source and the detector;

wherein the controller is further configured to control a temperature modifying means that is thermally coupled to the sample collection surface in accordance with a programmed or programmable temperature profile.

82. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface;

a detector adapted to detect the induced fluorescence; and

a humidity controller for controlling the humidity level around the sample collection surface.

83. (previously presented) A particle analyzer, comprising:

a particle concentrator adapted to collect and concentrate particles found within an aerosol;

a sample collection surface adapted to accept particles provided by the particle concentrator;

an energy source that provides energy that is adapted to induce fluorescence in the particles held by the sample collection surface;

a detector adapted to detect the induced fluorescence; and

a pH controller for controlling the pH level at the sample collection surface.

84. (previously presented) The particle analyzer of claim 83, further comprising a chemical controller for selectively adding one or more chemicals to the sample collection surface.